FAN FRAME STRUCTURE

FIELD OF THE INVENTION

The present invention relates to an improvement in the fan frame structure of an electrical fan. More specifically the invention makes use of collective-wire channel in the fan frame, enabling the power cables of the motor of the electrical fan to be inserted into the collective-wire channel, therefore allowing the power cables of the motor to be easily inserted, fitted and secured onto the fan frame structure.

BACKGROUND OF THE INVENTION

The frame **4** of conventional electrical fans (as shown on **Fig. 5**) used for reference makes use of a socket **41**. Between the fan frame **4** and its socket **41** there is an upward facing supporting part **42**. This upward facing supporting part **42** is used to fix the position of the socket **41** in the center of the fan frame **4**. The supporting part on the outer edge of the fan frame **4** possesses a cable slit **43**. The power cables **51** of the motor **5** can be fitted into this cable slit **43**. Thus the power cables **51** of the motor **5** are securely contained within.

The above mentioned fan frame **4** can of course allow the power cables **51** of the motor **5** to be securely contained within the cable slit **43**, but between the connection point of the power cables **51** with the motor **5** and the cable slit **43**, there is still a distance **B**. We assume the case that there is no additional securing for the power cables **51** in the stretch **B**. Even if the power cables **51** are securely contained within the cable slit **43**, the power cables **51** are still not secured in the stretch **B** between the cable slit **43** and the connection point of the motor **5** and can therefore move loosely. Thus the possibility of the power cables **51** leaving the secure positions in the cable slit **43** is given. Conventional structures make use of a fastening strip **6** (or plastic band) to solve this problem. In the stretch **B**, the power cables **51** are tied to the supporting part **42** of the fan frame **4**. This method gives additional securing to the power cables **51** in the stretch **B**. But given the case that the motor **5** has a defect or is damaged in any way and has to be repaired or replaced, the fastening strip **6** (or plastic band) has to be cut to take down the motor **5** of the electrical fan. After the motor **5** of the electrical fan has been repaired or replaced it has to be put back into the structure. At this time you have to use another fastening strip **6** (or plastic band) to tie the power cables **51** in the

stretch **B** onto the supporting part **42**. The possibility of causing confusion or damage to the power cables **51** while taking the structure apart or putting it together is high, therefore the above mentioned structure does not meet the demands for a secure and easy to use structure.

SUMMARY OF THE INVENTION

The main purpose of the present invention is to achieve the goal of inserting the power cables of the motor easily into the collective-wire channel on the fan frame.

Another purpose of the present invention is to achieve the goal of keeping the power cables of the motor secure in the collective-wire channel on the fan frame.

A third purpose of the present invention is to achieve the goal of securing the power cables of the motor in the collective-wire channel on the fan frame.

To achieve the above mentioned goals, the present invention makes use of an improvement in the fan frame structure, with the structure of the fan at least comprising a fan frame with a central part forming a socket for the fan, one fan wheel with a central axis and one motor mounted on the before mentioned socket, with the central hole taking in the axis of the fan wheel.

Between the fan frame and its socket there is a supporting part. This supporting part is used to fix the position of the socket on the central part of the fan frame. The motor structure consists of a stator attached to the before mentioned socket and a rotor connected the axis of the fan wheel.

On one side of the supporting part of the fan frame there is a desired area with collective-wire channel. The power cables of the motor can run through collective-wire channel. This allows the power cables of the motor to be easily inserted, fitted and secured onto the fan frame structure.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention may best be understood through the following description with reference to the accompanying drawings, in which:

Fig. 1 is a view showing the fan parts separated according to the present invention;

Fig. 2 is a front view of the fan frame structure according to the present invention;

Fig. 3 is the enlarged detail view of the part of the present invention labelled A-A in Fig. 2;

Fig. 4 is a view showing the collective-wire channel in use according to the present invention; and

Fig. 5 is a view showing the insertion of the power cables into the fan frame structure according to the conventional invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention will now be described more specifically with reference to the following embodiments. Please refer to **Fig. 1**, **Fig. 2** and **Fig. 3**. These drawings show fan parts according to the present invention, with parts separated, a front view of the fan fame structure of the present invention and the enlarged detail view of the part of the present invention labelled **A-A** in **Fig. 2**. The pictures show that the present invention refers to an improvement in the frame structure of an electrical fan. The fan structure consists of a fan frame **1**, a fan wheel **2**, a motor **3** and collective-wire channel **13** on the fan frame **1**. The power cables **33** of the motor **3** can run through collective-wire channel **13**, allowing them to be easily inserted, fitted and secured onto the fan frame **1**.

The above mentioned fan comprises a fan frame **1** with a central part forming a socket **11** for the fan, one fan wheel **2** with a central axis **21** and one motor **3** mounted on the before mentioned socket **11**, with the central hole taking in the axis **21** of the fan wheel **2**. Between the fan frame **1** and its socket **11** there is a supporting part **12**. This supporting part **12** is used to fix the position of the socket **11** on the central part of the fan frame **1**.

There is a cable slit **14** on the outer edge of the fan frame **1**. The motor structure **3** consists of a stator **31** attached to the before mentioned socket **11** and a rotor **32** into which the axis **21** of the fan wheel **2** is fitted. The motor **3** has got a power connection point with several power cables **33** attached to. On one side of the supporting part of the fan frame **1** there is a desired area **12** with collective-wire channel **13**. The collective-wire channel **13** comprises two side walls **131** protruding from the desired area **12**. In between these side walls **131** there are securing walls **132**. The two side walls **131** and the securing walls **132** are arranged in regular distances. Therefore, regular slits will form openings **133** in the free spaces between the two side walls **131** and the securing walls **132**. The space contained between these walls forms one

restricted area **134**. The restricted area **134** which is contained between the two side walls **131** and the securing walls **132** can take in the power cables **33** of the motor **3**. Both sides of the outer edge of the securing walls **132** have bevels **1321**, through which a hook-like surface **1322** is formed towards the contained free space. Through these features, the present structure presents a completely new improvement for the fan frame structure.

Please refer to **Fig. 3** and **Fig. 4**. These drawings show the enlarged detail view of the part of the present invention labelled **A-A** in **Fig. 2** and a view showing the collective-wire channel **13** of the present invention in use. The views show, that after the fan wheel **2** and the motor **3** are fitted onto the fan frame **1**, the power cables **33** of the motor **3** will hang loosely on the outer surface of the fan frame **1**. Now the collective-wire channel **13** mounted onto the desired area **12** between the fan frame **1** and the socket **11** can take in those power cables **33** of the motor **3**. While the power cables **33** of the motor **3** are inserted into the collective-wire channel **13**, these power cables **33** will be inserted into the openings **133** formed between the two side walls **131** and the securing walls **132** (or into the openings **133** formed between two securing walls **132**). Over the bevels **1321** on the outer edge of the securing walls **132**

the power cables **33** will slide smoothly into the restricted area **134** formed between the two side walls **131** and the securing walls **132** (or into the restricted area **134** formed between two securing walls **132**). The hook-like surface **1322** formed through the bevels **1321** on the securing walls **132** will secure the power cables **33** in the restricted area **134**. The power cables **33** which are thus restricted to the I collective-wire channel **13** will leave the fan frame **1** through the cable slit **14** (Not shown on picture). Therefore, through the use of the collective-wire channel **13** the power cables **33** can be easily inserted, fitted and secured inside of the collective-wire channel **13**.

In summation of the foregoing section, the invention herein fully complies will all new patent application requirement and is hereby submitted to the patent bureau for review and granting of the commensurate patent rights.

The present invention may be embodied in other specific forms without departing from the spirit of the essential attributes thereof; therefore, the illustrated embodiment should be considered in all respects as illustrative and not restrictive, reference being made to the appended claims rather than to the foregoing description to indicate the scope of the invention.

CLAIMS